UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/754,301	01/05/2001	Masayoshi Hashima	1075.1137/JDH	3311

21171 7590 01/14/2005

STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER	
HOGAN, MARY C	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/754,301	HASHIMA ET AL.	
	Examiner	Art Unit	
	Mary C Hogan	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01/05/01* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. **Claims 1-20** have been presented for examination.

2. **Claims 1-20** have been examined and rejected.

Specification

3. Upon review of the amendments to the specification, it appears that the specification is not difficult to consider. The objection to the specification requiring a substitute specification is withdrawn.

4. **Page 55, Lines 3-10** state that the status-transition diagram or table creating/editing section and the integrated developing environment are exemplified by technology disclosed in the StateFlow manual, StateMate manual, ZIPC manual and Softune manual. However, no reference was given as to the version numbers of this software. Different versions of software contain different features and functionalities, therefore, one skilled in the art would not know what version numbers of such technologies can or should be used according to the claimed present invention. Applicant's cooperation is requested in specifying the version numbers for the above-mentioned software.

Claim Interpretation

5. **Claims 1-20** are interpreted as directed to a support system for supporting the development of a control program (embedded software) to be embedded in the mechanism to control the mechanism **(specification, page 1, lines 10-14)** during its design. It is noted that mechanism is defined as "a machine or mechanical appliance" (The American Heritage College Dictionary, page 861) and that examples are given as to a mechanism, one being a CD changer **(specification page 2)**. Further, it is known that machines or mechanical appliances in this context involve a plurality of parts including an actuator and sensor. Gaston et al (U.S. Patent 6,546,297), herein referred to as **Gaston**, is directed to the design of control systems for appliances, machines, machine tools and the like including the development of a control program. **Gaston** gives several examples of mechanisms including stereo equipment, which encompasses a CD changer **(column 3, lines 36-43)**. Since **Gaston** teaches the design of a control system for appliances, machines or machine tools, including the development of control programs, it was concluded that this reference is in the same field of endeavor.

6. **Claims 1-20** are further directed to status-transition diagram or table creating/editing section and toward an integrated developing environment. It is noted that the specification states that the status-transition diagram or table creating/editing section and the integrated developing environment are exemplified by technology disclosed in the StateFlow manual, StateMate manual, ZIPC manual and

Softune manual **(specification, page 55, lines 3-10)**. Since no version of the software was given, the claims are interpreted as directed to software versions already known in the art as of the priority date of this application.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. **Claims 1,2,6,9-12,16,19 and 20** are rejected under 35 U.S.C. 102(e) as being anticipated by Gaston.

9. As to **Claims 1 and 11, Gaston** teaches a support system comprising:

a. a mechanism designing section for three-dimensionally designing a mechanism composed of a plurality of parts including an actuator and sensor **(Figure 20, element 2015, column 2, lines 44-52)**

b. a three-dimensional mechanism model simulating section, in which the mechanism is structured as a three-dimensional-mechanism model, for simulating an operation of the mechanism **(column 5, lines 58-60, column 6, lines 26-29)**

c. an embedded software developing section for developing a control program, which is embedded in the mechanism to control the operation of the mechanism as embedded software **(Figure 20, element 2020, and column 5, lines 4-9, 48-53)**

d. a first interface section for inputting designing data from said mechanism designing section to said three-dimensional-mechanism-model simulating section to be reflected on the three-dimensional-mechanism model **(column 7, lines 1-39)**

e. a second interface section for transferring data between said three-dimensional mechanism model simulating section and said embedded software developing section while synchronizing said three-dimensional-mechanism model simulating section and said embedded software developing section in operation with each other **(column 5, lines 48-57, column 7, lines 45-54)** ; and

f. said second interface section interfacing between said three-dimensional-mechanism model simulation section and said embedded software developing section while design data produced by said mechanism designing section is reflected, as required, in the three-dimensional-mechanism model, which is structured by said three-dimensional-mechanism model simulating section, through said first interface unit, so that designing of the mechanism and development of the embedded software is concurrently performed **(column 2, lines 48-57, column 7, lines 16-22, lines 45-52)**.

10. As to **Claims 2 and 12, Gaston** teaches the first interface section inputs the results of the simulation to the mechanism designing section to be reflected on the designing of the mechanism **(column 6, lines 16-19, column 9, lines 25-30, column 10, lines 7-18)**. Testing and debugging of a design includes using the results of a simulation, given by the computer, to make changes to the design through the mechanism designing section that will be reflected on the model of the mechanism until the design is functioning properly.

11. As to **Claims 6 and 16, Gaston** teaches embedded software developing section including a microcomputer chip in which said embedded software is embedded during developing **(column 5, lines 48-58)**; said second interface section transfers data between said three-dimensional mechanism model simulating section and said microcomputer chip while synchronizing said three-dimensional-mechanism model simulating section and said microcomputer chip in operation with each other **(column 5, lines 48-58, column 7, lines 50-54)**.

12. As **to Claims 9 and 19, Gaston** teaches the second interface section transferring an actuator instruction signal from said embedded software developing section to said three-dimensional mechanism model simulating section and a sensor signal which is obtained as a result of simulation in response to said actuator instruction signal **(column 5, lines 58-60, column 10, lines 6-18, column 4, lines 62-column 5, lines 6)**.

13. As to **Claims 10 and 20, Gaston** teaches analyzing and displaying variation of said actuator instruction signal for the actuator and said sensor signal from said three-dimensional mechanism model

simulating section with real time **(column 5, lines 57-60, column 6, lines 33-35, column 9, lines 18-32, column 10, lines 10-18)**.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. **Claims 3-5,7,8,13-15,17 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Gaston** as applied to **Claims 1 and 11** above, in further view of Harel et al (Harel et al, "STATEMATE: A Working Environment for the Development of Complex Reactive Systems", *Proceedings of the 10th International Conference on Software Engineering*, pages 396-406, 1998), herein referred to as **Harel**.

17. As to Claims **3-5,7,8,13-15,17 and 18**, **Gaston** teaches an embedded software developing section **(Figure 20, element 2020, and column 5, lines 4-9, 48-53)**.

18. **Gaston** does not expressly teach a status transition diagram, a multi-task which executes a plurality of tasks in parallel to one another and executes separately from the plural tasks, a synchronous task functioning so as to stop the plural tasks during simulation operation or the synchronous task set to a highest priority to control starting/stopping of the plural tasks in accordance to the synchronous task.

19. **Harel** teaches a status transition diagram **(page 400, column 1, 3rd paragraph, 2nd sentence)**, a multi-task **(page 401, column 1, lines 12-16)**, and a task set to the highest priority to control

starting/stopping of the plural tasks **(page 400, column 1, lines 17-21)**. The status transition diagrams or statecharts are used by the method disclosed in **Harel** in the design and simulation of systems such as real-time computer embedded systems that cannot adequately be described by a simple relationship that specifies outputs as a function of inputs, but rather, requires relating outputs to inputs through their allowed combinations in time **(page 396, column 2, lines 7-18)**.

20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the embedded software development section as taught in **Gaston** with the status transition diagram, multi-task and priority setting as disclosed in **Harel** to enable the proper design and simulation of real-time computer embedded systems that require relating outputs to inputs through their allowed combinations in time **(page 396, column 2, lines 7-18)**.

Response to Arguments

21. Applicant's arguments filed on 11/4/04 regarding claims 1-20 have been considered but are not persuasive.

22. Applicant argues: "In contrast to Gaston, according to the claimed present invention, designing of a mechanism is performed concurrently with development of embedded software for controlling the mechanism, while the simulation of the mechanizing is being performed, and the independent claims 1 and 11 are amended for clarity accordingly" (page 11, paragraph 1).

23. As to the above argument, Gaston teaches designing of a mechanism is performed concurrently with development of embedded software for controlling the mechanism (see paragraph f above). As to "*while* the simulation of the mechanizing is being performed", the claim language does not imply that the simulation of the mechanism is performed at the same time as (*while*) the designing of the mechanism and the development of the embedded software. The simulation of a mechanism is performed after the design of the mechanism and its embedded software in order to test the design for proper operation.

24. Applicant argues that the limitations in the claims are not taught or suggested by Gaston (page 12, paragraph 3).

25. In response to the arguments that the limitations in the claims are not taught or suggested by Gaston, the mapping of the limitations in Gaston have been modified to more accurately reflect where Gaston teaches the limitations stated in the claim language.

Conclusion

26. The prior art made of record, see PTO 892, and not relied upon is considered pertinent to applicant's disclosure, careful consideration must be given prior to Applicant's response to this Office Action.

27. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C Hogan whose telephone number is 571-272-3712. The examiner can normally be reached on 7:30AM-5PM Monday-Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on 571-272-3716. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary C Hogan
Examiner
Art Unit 2123

KEVIN TESKA
SUPERVISORY
PATENT EXAMINER